

# DEFLATION, REAL COST OF DEBT & VALUATIONS

## How to adjust DCF models

Nicholas I. Georgiadis

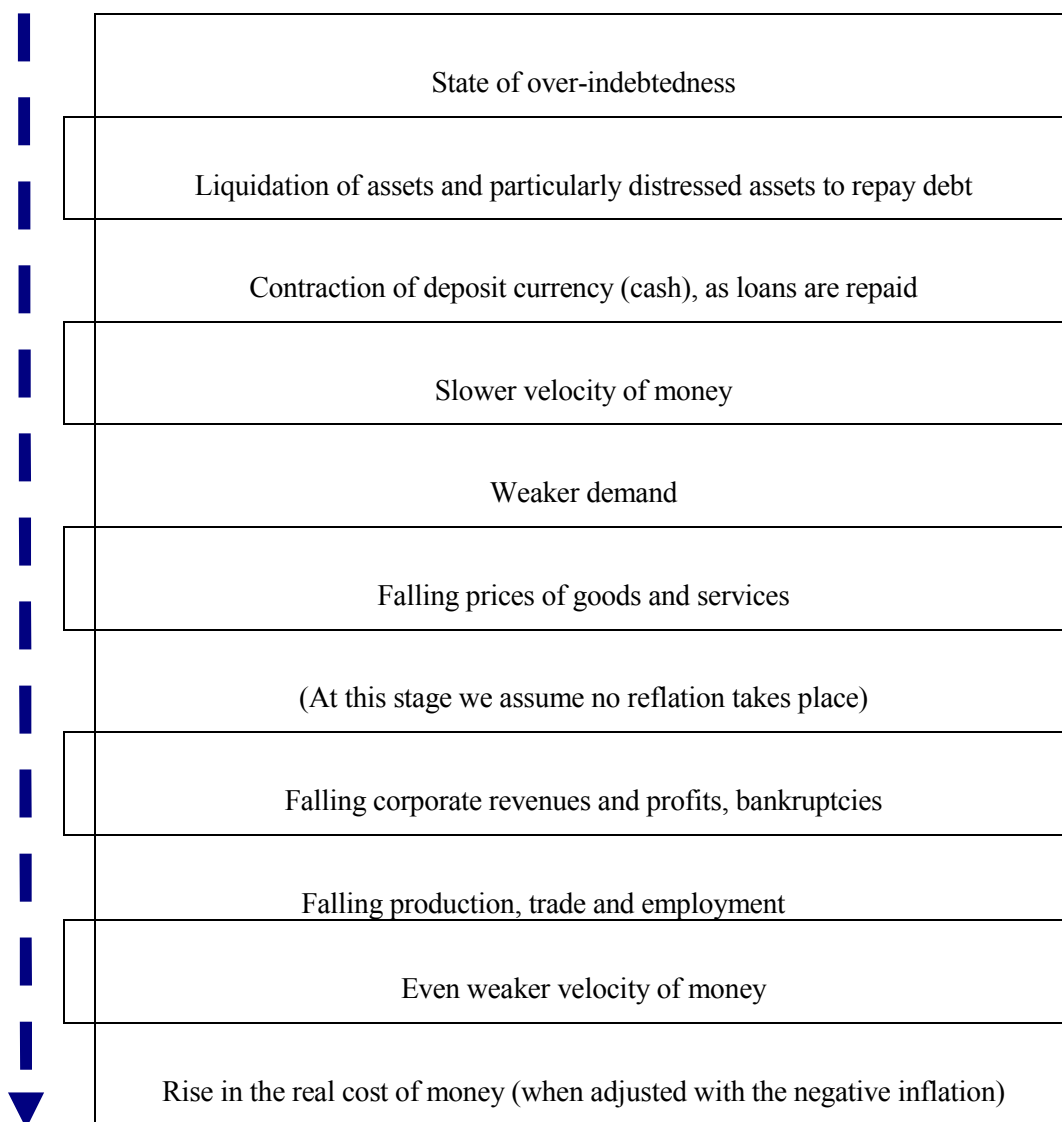
Director of Research - **“VRS” (“Valuation & Research Specialists”)**

Now that deflation is spreading across the US economy and the world markets have started experiencing similar effects, it is time to explore the implications of deflation on cost of debt, one of the assumptions needed to run equity valuation models.

As a first step, we should describe the current environment of falling prices across the board: Weak demand from consumers in combination with high inventory levels have put pressures on companies to sell their products at the lowest possible price level and have created the first signs of deflation. This case is evident despite the recent stimulus package released by the US government in an effort to boost consumption and aggregate demand. It seems that all recent initiatives by the US economic authorities to stimulate economy have so far failed to produce concrete results in demand for goods and services since people are still hesitant to spend money because they fear of a worse economic future. Consumers also have as top priority now to repay their loans and control their debt obligations before it is too late.

This mix of falling prices and high leverage is often called as deadly economic condition. It was initially analyzed by Irving Fisher (\*), an American economist and professor, in his Debt-Deflation Theory of

Great Depressions (1933). This theory supports the view that conditions of debt and deflation in the economy tend to create a depressed environment for consumers and corporations alike. The main chain of effects according to Fisher's theory is presented below:



Taking into consideration the repercussions of debt deflation on the broader economy and particularly to companies of price sensitive sectors we should deduce that if such scenario arises in the following months the real cost of debt at the least for the explicit period in the DCF based valuation will tend to be higher.

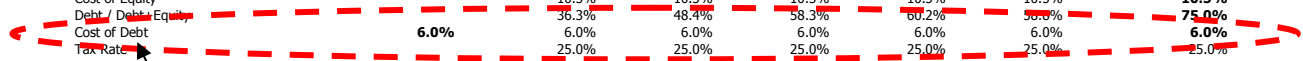
	2008	2009	2010	2011	2012	L-Term Assumptions
<b>ASSUMPTIONS</b>						
Growth Rate (Sales)	8.00%	236.40%	62.52%	23.89%	8.69%	1.50%
EBIT Margin	1779.88%	328.02%	171.09%	146.53%	141.14%	90.00%
Tax Rate	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
Working Capital (% of sales)	-17.81%	1.81%	-0.65%	0.19%	-9.64%	2.00%
Capex (% of sales)	56.00%	-31.69%	4.07%	-0.14%	-9.87%	5.00%
Cost of Capital	8.32%	7.59%	7.00%	6.89%	6.97%	6.00%
Depreciation (% of sales)	1.82%	0.70%	0.56%	0.59%	0.70%	2.00%
<b>Turnover</b>						
EBIT	2,752	9,257	15,045	18,639	20,258	20,562
Less: Adjusted Tax	48,979	30,365	25,741	27,312	28,592	18,506
Adjusted Operating Profit	12,245	7,591	6,435	6,828	7,148	4,626
Plus: Depreciation	36,734	22,774	19,306	20,484	21,444	13,879
<b>Operating Cash Flow</b>	50	65	85	110	143	411
Less: Change in Working Capital	36,784	22,839	19,390	20,594	21,587	14,290
Less: Capex	-490	167	-98	35	-1,952	411
<b>Cash Flow to the Firm (FCFF)</b>	62,230	56,064	17,624	-27	-2,000	1,028
<b>Cash Flow to the Firm (FCFF)</b>	<b>-24,955</b>	<b>-33,392</b>	<b>1,864</b>	<b>20,585</b>	<b>25,539</b>	<b>12,851</b>
Discount Factor	0.923	0.864	0.816	0.766	0.714	0.747
Present Value of Cash Flows	-23,038	-28,845	1,521	15,769	18,232	
Accumulated Present Value	-23,038	-51,883	-50,362	-34,593	-16,361	
Residual Value						285,580
<b>Present Value of Residual Value</b>						<b>213,402</b>
Value of Firm	197,041					
% Residual Value of Total	108.30%					

**VALUATION**

Present Value of Future Cash Flows	-16,361
Present Value of Residual Value	213,402
Value of firm	197,041
Less: Net Debt	89,566
<b>Value of firm</b>	<b>107,475</b>
Outstanding number of shares (000)	14,968
Current Price	5.12
<b>Value of share</b>	<b>7.18</b>
<b>% upside potential</b>	<b>40.24%</b>

**WACC CALCULATION**

	2008	2009	2010	2011	2012	
Risk Free Rate	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Beta Factor	1.20	1.20	1.20	1.20	1.20	1.20
Market risk Premium	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Cost of Equity	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%
Debt / Debt + Equity	36.3%	48.4%	58.3%	60.2%	56.8%	75.0%
Cost of Debt	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Tax Rate	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
<b>Weighted Average Cost of Capital</b>	<b>8.32%</b>	<b>7.59%</b>	<b>7.00%</b>	<b>6.89%</b>	<b>6.97%</b>	<b>6.00%</b>



Debt deflation conditions in the economy may imply an upward adjustment for cost of debt in the DCF based valuation model.

(\*) Professor Fisher (1867-1947) was an early mathematical economist, specializing in monetary and financial economics. Fisher's contributions to the field of economics included the equation of exchange, the distinction between real and nominal interest rates, and an early analysis of inter-temporal allocation.



Name	Irving Fisher
Birth	February 27, 1867
Death	April 29, 1947 (aged 80)
Nationality	United States
Field	Mathematical economics
Influences	Willard Gibbs William Graham Sumner
Contributions	Fisher equation Equation of exchange Price index Phillips curve Money illusion Fisher separation theorem

Source: [http://en.wikipedia.org/wiki/Irving\\_Fisher](http://en.wikipedia.org/wiki/Irving_Fisher)

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